



# Nguyen Trong Bach

## Computer Vision & AI Student

B.Sc. ICT candidate | Deep Learning, Object Detection, Medical Image Analysis

### Work Experience

Oct 2025 – Present

#### IT Intern

FUJIOLOGIC Technology Co., Ltd.

Hanoi, Viet Nam

- Deliver front-line technical support for software configuration, troubleshooting, and routine maintenance for internal engineering workflows.
- Assist in diagnosing recurring technical problems and documenting practical solutions to improve team knowledge transfer.
- Support environment setup and internal IT operations to keep development and testing activities stable.

Feb 2025 – Aug 2025

#### IT Intern

C+ Technology JSC

Hanoi, Viet Nam

- Supported day-to-day IT operations, including software deployment, environment configuration, and integration testing for internal tools.
- Collaborated with team members to identify, reproduce, and resolve technical issues with minimal disruption to users.
- Strengthened practical understanding of system maintenance, documentation, and communication in a professional software environment.

### Research & Projects

Source

#### Skin Lesion Classification – B.Sc. Thesis

Python, PyTorch, EfficientNet-B0, ResNet-50, DenseNet-121, Swin-Tiny, Grad-CAM

- Undergraduate thesis supervised by **Dr. Nghiem Thi Phuong**; comparative study of deep learning models for 7-class dermoscopic skin lesion classification on ISIC 2018 / HAM10000.
- Benchmarked CNN and Transformer-based backbones; reported best single-model performance around **88.4% accuracy** and **0.831 macro F1**, with ensemble accuracy around **89.5%** and AUC around **0.980**.
- Addressed strong class imbalance through weighted sampling, Mixup/CutMix-style augmentation, label smoothing, and ablation-based model analysis.
- Built Grad-CAM explainability outputs and interactive demo interfaces with Streamlit and Gradio for inference-oriented presentation.

Source

#### Figure Skating Action Recognition

Python, PyTorch, 3D Pose TCN, Video CNN, Teacher-Student Learning

- Designed a multi-modal action-recognition pipeline for figure skating movements using 3D skeleton pose sequences and raw video clips.
- Implemented a Temporal Convolutional Network for pose-based classification and a lightweight video CNN baseline for RGB-based comparison.
- Prepared automated data collection, manifest management, preprocessing, and end-to-end training/evaluation scripts.

Source

#### Smoking Detection System

Python, Ultralytics YOLO, OpenCV, FastAPI, Android Studio / Java

- Developed a multi-stage smoking detection pipeline: person detection, cigarette candidate detection, and smoke/no-smoke verification.
- Trained YOLO-based detection models with video inference, annotated outputs, and logging; integrated a FastAPI backend for serving predictions.
- Built an Android application prototype to submit media, display detection results, and support a practical user-facing demonstration.

### Contacts

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- [github.com/jecxk](https://github.com/jecxk)
- LinkedIn: to be updated
- [leetcode.com/u/jecxk\\_](https://leetcode.com/u/jecxk_)
- Hanoi, Viet Nam

### About Me

I am an ICT undergraduate student at the University of Science and Technology of Hanoi with a strong focus on Computer Vision and Applied AI. My work centers on deep learning for image classification, object detection, video understanding, and practical AI deployment. I enjoy building complete pipelines from data preparation and model training to evaluation, visualization, and demo applications.

### Education

#### B.Sc. / Information and Communication Technology University of Science and Technology of Hanoi (USTH)

Relevant coursework: Machine Learning, Deep Learning, Digital Image Processing, NLP, Probability & Statistics, Data Structures & Algorithms, OOP, Distributed Systems  
Dec 2023 – Aug 2026 (expected) GPA:

13.19/20

### Research Interest

Computer Vision; Medical Image Analysis; Object Detection; Video Understanding; Deep Learning; Efficient Real-time Inference; Data-centric AI; Model Robustness and Interpretability.

### Technical Skills

#### Programming

Python, C/C++, Java, JavaScript/TypeScript, SQL,  $\LaTeX$

#### ML / DL

PyTorch, torchvision, scikit-learn, HuggingFace Transformers, NumPy, Pandas

#### Computer Vision

OpenCV, Ultralytics YOLO, Grad-CAM, image/video preprocessing

#### Deployment / Tools

FastAPI, Streamlit, Gradio, Git, Docker, Jupyter/Colab, Android Studio

### Foreign Languages

English: IELTS 6.5

Vietnamese: Native

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## Selected Projects

### NLP: IT Job Description Entity Extraction

Source

*Python, HuggingFace Transformers, BERT, RoBERTa, FastAPI*

- Built a Transformer-based Named Entity Recognition system to extract structured information from unstructured IT job postings.
- Targeted fields include role, skill, location, experience, and salary; compared BERT, DistilBERT, and RoBERTa-style backbones.
- Created a FastAPI backend and browser-based frontend to demonstrate model inference in an end-to-end application workflow.

Source

### SROIE Receipt OCR & Information Extraction

*Python, PaddleOCR, LayoutLMv3, DONUT, Rule-based IE*

- Developed a receipt understanding pipeline for OCR and key information extraction using the SROIE-style document understanding setting.
- Compared OCR-driven rule-based extraction, LayoutLMv3 token classification, and DONUT-style end-to-end document parsing.
- Prepared aligned image, OCR box, and entity annotation files; evaluated extraction quality with field-level accuracy, F1, and normalized edit distance.

Source

### Secure Online Banking Session

*Python, FastAPI, OpenSSL, bcrypt, Wireshark*

- Implemented a secure online banking prototype demonstrating TLS 1.3 communication, secure session handling, and password hashing.
- Added HttpOnly cookie-based sessions, CSRF protection, and Wireshark-based verification of encrypted traffic behavior.

Source

### Mobile Application Final Project

*Java, Android Studio, UI Design, API Integration*

- Built Android application screens and basic user flows in Java, focusing on practical mobile UI implementation and app structure.
- Practiced activity management, data handling, and project organization in Android Studio.

## Academic Strengths

- Strong practical orientation in AI projects: data preprocessing, model training, validation, error analysis, and demo deployment.
- Experience writing technical reports in  $\text{\LaTeX}$  and presenting experimental results with metrics, confusion matrices, and qualitative visualizations.
- Comfortable with both research-style experimentation and product-style implementation, especially for Computer Vision systems.

## Coursework Highlights

### AI / Data

Machine Learning, Deep Learning, Natural Language Processing, Probability & Statistics

### Computer Vision

Digital Image Processing, Image Classification, Object Detection, Video Understanding

### Software

Data Structures & Algorithms, Object-Oriented Programming, Distributed Systems, Mobile Programming

### Systems / Security

Computer Networks, Cryptography, Operating Systems, Database Systems

## Profile Summary

Early-career AI practitioner with hands-on experience in computer vision, medical image classification, object detection, NLP, OCR, and mobile/web demo development. Interested in research internship roles where rigorous experimentation, clean implementation, and clear technical communication are valued.

## Core Tools

### Languages

Python, Java, C/C++, JavaScript, SQL

### Frameworks

PyTorch, HuggingFace, Ultralytics, OpenCV, FastAPI

### Data / Experiment

NumPy, Pandas, scikit-learn, Matplotlib, Jupyter, Google Colab

### Engineering

Git, Docker, Android Studio,  $\text{\LaTeX}$ , VS Code

## Activities

### USTH Coders Club

Marketing Team – Content & Design  
Oct 2023 – Jun 2025

- Produced promotional content and visual materials for programming-related activities.
- Completed internal coding workshop activities and collaborated with student organizers.

## Selected Links

### GitHub

[github.com/jecxk](https://github.com/jecxk)

### Skin Thesis Project

[github.com/jecxk/Thesis\\_project\\_skin](https://github.com/jecxk/Thesis_project_skin)

### SROIE OCR / IE

[github.com/jecxk/sroie-ocr-ie\\_](https://github.com/jecxk/sroie-ocr-ie_)

### LeetCode

[leetcode.com/u/jecxk\\_](https://leetcode.com/u/jecxk_)

## References

Available upon request.

Updated: April 2026